

Hepatitis C vaccine shows promise in early clinical trial

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Around 3.2 million Americans have chronic Hepatitis C, making it the most common long-term bloodborne illness in the US. But could a vaccine for the disease be in sight? Researchers reveal how a vaccine has shown promise against hepatitis C infection in a phase 1 clinical trial.

Researchers say a new vaccine - developed to initiate and boost the body's immune response to hepatitis C infection - has shown promise in a phase 1 clinical trial.

Hepatitis C is a liver disease caused by the hepatitis C virus (HCV). It is transmitted through contact with the blood of an infected individual, most commonly by sharing needles, syringes or other drug-injecting equipment, or through needle injuries in health care settings.

Being born to a mother with HCV can also cause infection. In rare cases, the virus can be spread through sexual contact.

Around 75-85% of people with HCV will develop chronic hepatitis C infection. Of these, around 60-70% will develop chronic liver disease, and 5-20% will develop liver cirrhosis over a period of 20-30 years. Around 1-5% of people with chronic hepatitis C die from liver cirrhosis or liver cancer.

Although the majority of people with HCV go on to develop chronic infection, the research team - including Prof. Ellie Barnes of the Nuffield Department of Medicine at Oxford University in the UK - notes that 1 in 4 people clear the virus from their body naturally on first infection. This indicates that the body is able to produce an immune response to ward off the virus.

In their study, published in the journal *Science Translational Medicine*, the researchers reveal how they developed a two-tier vaccine approach that triggers and enhances an immune response to HCV, protecting against infection.

Vaccine 'highly immunogenic against HCV, safe and well tolerated'

Prof. Barnes and colleagues tested the safety and effectiveness of the vaccine in 15 healthy volunteers.

Firstly, the volunteers were given a vaccine that "primes" an initial immune response to HCV. A second vaccine was administered 8 weeks later, which "boosts" this immune response and protects against infection.

The researchers explain that the vaccines were developed to trigger a strong response from T cells, which they say are the immune cells that ward off infection in people who are able to clear HCV from their body naturally.

Results of the study revealed that the two vaccines activated a strong immune response in the volunteers, which the team says continued over the 6-month study period. What is more, the researchers say the immune responses of volunteers were comparable to those found in individuals who clear HCV naturally.

Commenting on these findings, Prof. Barnes says:

"The T cell response is really high, and what's promising is that this is a broad response. A range of different T cells are produced targeting different parts of the hepatitis C virus.

This is the first highly immunogenic T cell vaccine developed against hepatitis C. We found it to be safe and well tolerated in this group of 15 healthy volunteers."

The team says another trial of the vaccine is already taking place in the US, in which researchers are testing its efficacy among intravenous drug users. "We won't really know if it works - if it is able to prevent hepatitis C infection - until we have the results of the efficacy studies in the US," notes Prof. Barnes.

In August, Medical News Today reported on a study suggesting that current screening and treatments for hepatitis C could make it a "rare" disease by 2036, affecting just 1 in 1,500 people in the US.

But the researchers of that study claim that if one-time screening was offered to all Americans - allowing people to receive earlier treatment - hepatitis C could become a rare disease 10 years earlier.

"Although recent screening recommendations are helpful in decreasing the chronic HCV infection rates, more aggressive screening recommendations and ongoing therapeutic advances are essential to reducing the burden, preventing liver-related deaths and eventually eradicating HCV," says senior author Jagpreet Chhatwal, PhD, assistant professor of health services research at the University of Texas MD Anderson Cancer Center.

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